



US006047556A

United States Patent [19]**Lifson**[11] **Patent Number:** **6,047,556**[45] **Date of Patent:** **Apr. 11, 2000**[54] **PULSED FLOW FOR CAPACITY CONTROL**[75] Inventor: **Alexander Lifson**, Manlius, N.Y.[73] Assignee: **Carrier Corporation**, Syracuse, N.Y.

4,854,130 8/1989 Naruse et al. 62/513 X

5,063,750 11/1991 Englund 62/196.3

5,226,472 7/1993 Benevelli et al. 62/217 X

5,634,350 6/1997 De Medio 62/217

5,816,055 10/1998 Ohman 62/196.3 X

[21] Appl. No.: **08/986,447**[22] Filed: **Dec. 8, 1997**[51] Int. Cl.⁷ **F25B 3/00**[52] U.S. Cl. **62/196.2; 62/196.4; 62/217;**
62/513; 251/129.05[58] Field of Search 62/196.2-196.4,
62/217, 513; 251/129.05[56] **References Cited****U.S. PATENT DOCUMENTS**

4,838,037 6/1989 Wood 251/129.05 X

Primary Examiner—Henry Bennett*Assistant Examiner*—Marc Norman[57] **ABSTRACT**

Step control in capacity modulation of a refrigeration or air conditioning circuit is achieved by rapidly cycling a solenoid valve in the suction line, economizer circuit or in a bypass with the percent of "open" time for the valve regulating the rate of flow therethrough. A common port in the compressor is used for economizer flow and for bypass.

3 Claims, 1 Drawing Sheet